THE CANADIAN SPACE AGENCY

2009-2010 Estimates

REPORT ON PLANS AND PRIORITIES

Minister of Industry

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MINISTER'S MESSAGE

As Minister of Industry, I am committed to the long-term competitiveness and prosperity of our country. Canada has many economic advantages upon which we must continue to build if we are to set the right conditions for our long-term success. With this in mind, Industry Canada and its Portfolio partners are striving toward the development of an innovative economy with robust sectors and an efficient and competitive marketplace.

Our priorities remain aligned with *Advantage Canada*, the government's long-term economic plan. Here, we set out clear objectives, including the reduction of taxes, the encouragement of entrepreneurship, and the development of a knowledge-based economy.

In the *2009–2010 Report on Plans and Priorities*, we recognize that as we look to the year ahead we are entering a period of continued global economic uncertainty, one that demands clear and strategic action on the part of the government to ensure we accomplish the long-term goals we have set for ourselves. Our departmental priorities and initiatives will be guided by a balanced consideration of the demands of the global economic situation and our long-term vision for Canada's growth and prosperity.

In Budget 2009 — Canada's Economic Action Plan, the government has developed a clear and comprehensive response to the slowdown in the global economy, which is in keeping with the continuing objectives of *Advantage Canada*. The economic action plan addresses short-term realities, while setting in place the conditions to strengthen Canada's economy for generations to come.

Industry Canada and its Portfolio partners are at the heart of the government's strategy to stimulate the Canadian economy. We are taking steps to improve the competitiveness of Canada's traditional economy by providing short-term support for key sectors such as the auto industry. We are ensuring that all regions of Canada prosper by supporting economic diversification. We are fostering small businesses by improving access to credit and encouraging growth through tax reductions and incentives. We are supporting measures to develop a highly skilled workforce through such means as expanding the Canada Graduate Scholarships program. At this time of intense international competition for the world's best and brightest, government support is helping to attract and retain these individuals in Canada. We are positioning Canada as a leader in the global knowledge economy.

In the ongoing pursuit of our mandate, we will continue to focus on innovation as a means to develop a globally competitive economy. Our ultimate goal is to help Canadians continue to enjoy a quality of life that is envied throughout the world.

It is my pleasure to present this year's *Report on Plans and Priorities* for Industry Canada and its Portfolio partners, which will outline in greater detail the priorities and pursuits in which we will be engaged in the year to come.

Tony Clement,
Minister of Industry

PRESIDENT'S MESSAGE

The Canadian Space Agency is beginning a new chapter in its history. As its new President, it is an honour for me to lead this dynamic organization during these changing times. In order to ensure the continued success for the Canadian Space Agency, I plan on building on the heritage left by earlier generations of Presidents while taking into consideration our current national situation.

By making use of our outstanding Canadian space expertise in industry, academia and government, and by drawing on the vast talent of our employees, we will address the priorities of government and return social and economic benefits to Canadians.

Following careful consideration of the challenges and opportunities ahead, I submit, for tabling in Parliament, the following 2009-2010 Report on Plans and Priorities (RPP) for the Canadian Space Agency. This document outlines the Agency's main initiatives, priorities and expected outcomes for the upcoming years.

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Steve MacLean,
President

SECTION 1: OVERVIEW

1.1 RAISON D'ÊTRE AND RESPONSIBILITIES

The mandate of the Canadian Space Agency (CSA) is *"to promote the peaceful use and development of space, to advance the knowledge of space through science and to ensure that space science and technology provide social and economic benefits for Canadians".*

The CSA is achieving this mandate in cooperation with other government departments/agencies, industries, and universities, as well as international partners. In addition to delivering its own programs, the CSA is responsible for coordinating all federal civil space-related policies and programs pertaining to science and technology (S&T) research, industrial development, and international cooperation.

To learn more about the mandate of the Canadian Space Agency, go to:
http://www.asc-csa.gc.ca/eng/about/mission.asp

The Canadian Space Strategy (CSS) approved by the Government of Canada in February 2005 guides the Canadian Space Agency in the management of its programs. The Strategy is instrumental in focusing decision-making at the CSA and aligning all space related program activities through its strategic outcome and long-term priorities.

To learn more about the Canadian Space Strategy, go to:
http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp

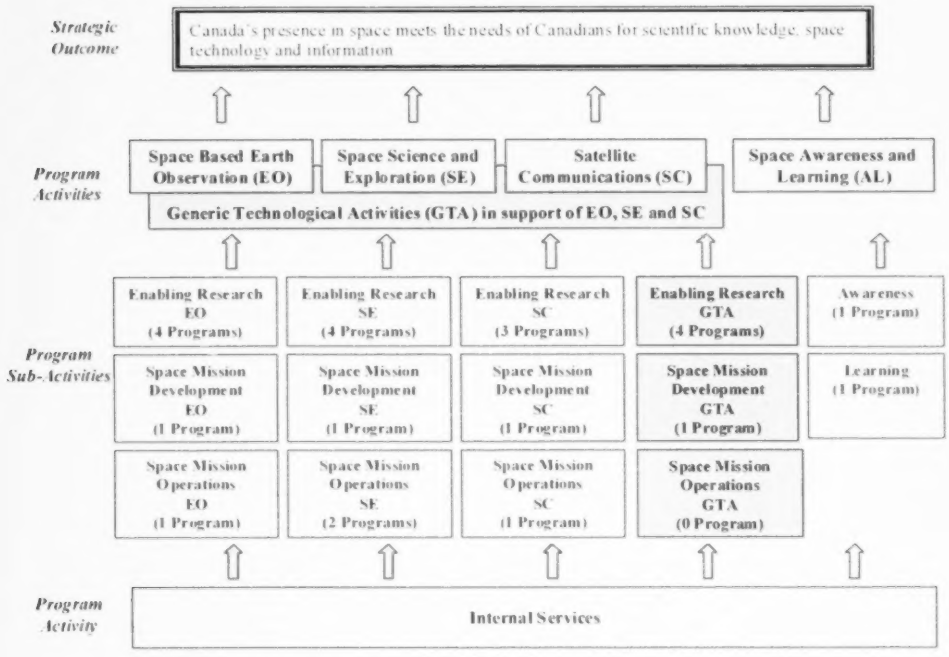
The release in 2007 of the Government's Science and Technology Strategy – *Mobilizing Science and Technology to Canada's Advantage* – provides the CSA with a solid framework with which to prioritise CSA programs and initiatives to "make Canada a world leader in science and technology and a key source of entrepreneurial innovation and creativity".

To learn more about the Canada's Science and Technology Strategy, go to:
http://www.ic.gc.ca/epic/site/ic1.nsf/en/h_00231e.html

CSA Governance Structure

Reporting to the Minister of Industry, the Canadian Space Agency's Chief Executive Officer is the President, assisted by the Executive Committee, which is composed of the Senior Vice-President, four Directors General (Space Science, Space Technologies, Space Programs, and Operations Branches) as well as the Chief Financial Officer, the Chief Human Resources Officer, and the Director of Communications and Public Affairs. This governance structure became effective on January 2, 2008.

1.2 STRATEGIC OUTCOME AND PROGRAM ACTIVITY ARCHITECTURE


Strategic Outcome
Canada's presence in space meets the needs of Canadians for scientific knowledge, space technology and information
Program Activities
Space Based Earth Observation (EO)
Space Science and Exploration (SE)
Satellite Communications (SC)
Space Awareness and Learning (AL)
Generic Technological Activities (GTA) in support of EO, SE and SC
Program Sub-Activities
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Awareness (1 Program)
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Program Activity
Internal Services

CSA Strategic Outcome: Canada's presence in space meets the needs of Canadians for scientific knowledge, space technology, and information.

Description of Program Activities[1]

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Space Science and Exploration (SE): To better understand the Solar System and the Universe; expand our knowledge on the constituent elements and origins of life; and strengthen a human presence in space. In doing so, the CSA sustains and increases Canada's contribution to humankind's scientific knowledge, to the exploration of our solar system and the Universe and to the development of related technologies.

Satellite Communications (SC): To provide all Canadians with the means to participate and fully benefit from the global information age. In doing so, the CSA upholds Canada's status as a world leader in Satellite Communications and extends the most advanced products and services to all Canadians.

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[1] Description of Program Activities are taken from the Main Estimates available on line: http://www.tbs-sct.gc.ca/est-pre/estime.asp

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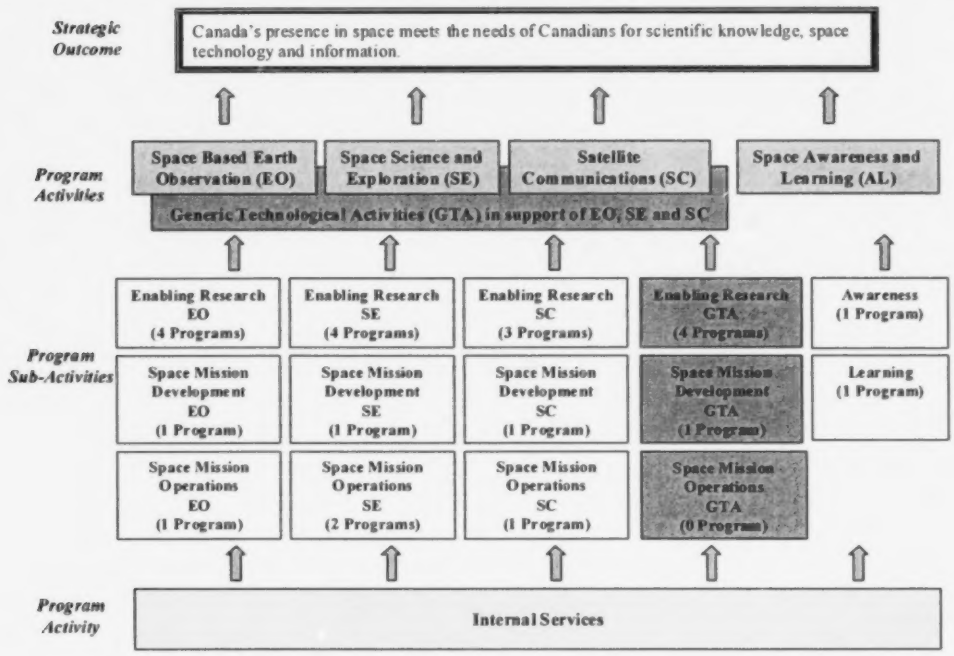
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Generic Technological Activities (GTA): To provide leadership, coordination or support to Earth Observation, Space Science and Exploration, and Satellite Communications through activities that are generic in their nature since they contribute to all three program activities.

Awareness and Learning (AL): To further public understanding and engagement with regards to space related issues, ultimately improving the scientific literacy of Canadians by carrying out a national awareness and learning initiative in support of the CSA programs.

Internal Services: To implement the government's commitment to modern public service management in accordance with the Management Accountability Framework's (MAF) expectations.

Description of Program Sub-Activities

Science and technology related program activities are broken down into three sub-activities, which supports the CSA in meeting the Government of Canada's Science and Technology Strategy, which outlines the conditions for success: a strong private-sector commitment to S&T, a strengthened knowledge base and, using leading-edge S&T initiatives as a magnet for talent.

Enabling Research: To provide leadership, coordination and support for basic and applied research and experimental development in line with the CSA's priorities and stakeholders' expectations in order to increase the knowledge base, devise new applications through space missions, and allow the transfer of intellectual property and proven technologies to Canadian industry, academia, and government organizations.

Space Mission Development: To provide coordination and support for the development of space missions in line with CSA's priorities and stakeholders' expectations through the definition, critical design, manufacturing, integration, testing and delivery phases leading to launch and early operations of space systems.

Space Mission Operations: To provide coordination or support to the operations of space missions in line with the CSA's priorities and stakeholders' expectations through the development and conduct of on-orbit operations, system maintenance and logistic support, as well as data handling and delivery.

The space awareness and learning program activity has two sub-activities which focus the CSA's initiatives on promoting an innovation culture, fostering education and the careers of young Canadians in the sciences and engineering, and attracting, developing and retaining highly qualified personnel in science and technology space related fields.

Awareness: To increase public awareness and understanding of how space programs affect and improve the quality of life.

Learning: To direct a sustained, multi-dimensional, interactive learning program to build knowledge and enhance interest in space science and technology.

1.3 PLANNING SUMMARY

CANADIAN SPACE AGENCY STRATEGIC OUTCOME

Canada's presence in space meets the needs of Canadians for scientific knowledge, space technology and information.

PERFORMANCE INDICATORS

1. Canada's rank in terms of support for peaceful space-related R&D; the measurement will provide the list of CSA missions, looking 10 years into the future and identifying the following for each mission:
   - the CSA's role (leader or partner); and,
   - the CSA's contribution (%) to the total mission budget.

2. State of the scientific, industrial and public sector communities involved in the space sector:
   - number of universities, companies and organizations involved;
   - number of people employed in space-related jobs; and,
   - number of corresponding FTEs in academia, industry and government in Canada.

3. Access and utilization by the Canadian government and industry of space data generated by Canadian space missions:
   - number of organizations that access/use data generated by Canadian space missions; and,
   - number of federal government employees who access/use such data.

RESOURCES	2009-2010	2010-2011	2011-2012
FINANCIAL ($ in millions)	355.1	323.8	327.2
HUMAN (FTEs)	711.2	704.2	697.9

Note: Measures announced in the Budget 2009 are not reflected in the RPP 2009-2010 and will be identified in a subsequent estimates document.

1.4 CONTRIBUTION OF PROGRAM ACTIVITY PRIORITIES TO THE CSA STRATEGIC OUTCOME

The peaceful development and use of space has significantly matured over the past decade. An increasing number of countries are now involved in space-related science and technology activities and close to a thousand satellites are expected to be launched in the next ten years. Two-thirds of these satellites projects will serve government programs in Earth Observation, and Space Science and Exploration while most of the commercial investments are mainly related to communications and to a lesser extent to Earth observation. The Canadian government investments in these three fields of space science and technology are guided by the Canadian Space Strategy through which the CSA manages its program activities. All together they contribute to the CSA Strategic Outcome and to the Government of Canada Outcomes as shown in the table below.

PROGRAM ACTIVITY ALIGNMENT TO GOVERNMENT OF CANADA OUTCOMES

Program Activity	Forecast Spending 2008-2009	Planned Spending			Government of Canada Outcomes
		2009-2010	2010-2011	2011-2012	
Space Based Earth Observation (EO)	67.2	85.8	85.4	105.3	A Clean and Healthy Environment
Space Science and Exploration (SE)	162.9	143.3	117.6	103.8	A Strong and Mutually Beneficial North American Partnership
Satellite Communications (SC)	29.2	20.3	14.9	9.9	Safe and Secure Communities
Generic Technological Activities (GTA) in support of EO, SE, and SC	49.5	53.8	55.6	57.8	An Innovative and Knowledge-Based Economy
Space Awareness and Learning (AL)	8.1	8.9	8.8	8.8	A Vibrant Canadian Culture and Heritage
Internal Services	N/A	43.0	41.6	41.7	Not Applicable
TOTAL	**316.9**	**355.1**	**323.8**	**327.2**	

Note: Measures announced in the Budget 2009 are not reflected in the RPP 2009-2010 and will be identified in a subsequent estimates document.

Canada is at a crossroads where major projects have been delivered and are now operational, while opportunities to collaborate with international partners in major space missions are growing. Major projects are now fully operational: RADARSAT-2 Earth observation satellite; Dextre, the two-armed dexterous robot to the International Space Station (ISS); and, the successful flight demonstration of the KA broadband capabilities aboard the Anik F2 communication satellite. These and other remarkable accomplishments, combined with sustained contribution by Canadian astronauts to international space exploration missions, have continued to brand Canada as a science and technology focused and reliable trading partner, which is actively engaged to promote a science and innovation-driven culture, and foster in young Canadians a desire for education and careers in the sciences and engineering.

In 2008-2009, the CSA carried out active consultations with government departments and agencies, stakeholders in academia and industry as well as international partners, in order to move forward with a renewed impetus to sustain and enhance Canada's space advantage. These consultations have helped to outline a range of space activities required today to respond to supporting the priorities of the government and the evolving needs of Canadians. As a result, the CSA is in the final stage of preparing a Long Term Space Plan with clear principles and criteria that will guide the government's commitment and investments in space for the years ahead. In all cases, space activities that will flow from the Long term Space Plan will be aligned with the Canadian Space Strategy and the Government's Science and Technology Strategy, and will contribute to building Canadian space science and technology excellence, expertise and global recognition of Canada as an innovation driven space-faring nation.

In summary, the critical challenges that Canada faces related to space consist of increasing significantly the use of space data and information by the Government of Canada to serve its strategic and public policy interests, ensuring the sustainability and capacity of its space industry and academia, and strengthening its international partnerships through meaningful, leading-edge contributions.

Space Based Earth Observation (EO) Contribution to the CSA Strategic Outcome

Program Activity: Space Based Earth Observation (EO)	**PLANNED SPENDING ($ in millions)**		
	2009-2010	**2010-2011**	**2011-2012**
Ongoing Priority: Develop and operationalize the use of space based Earth observation for the benefit of Canadians.	85.8	85.4	105.3

Earth Observation missions are helping the government deliver on priorities such as protection of the environment, sustainable development, management of natural resources, understanding climate change, monitoring atmospheric constituents and air quality, providing support for disaster management and ensuring the safety and security of Canadians. Canada has been at the forefront of Earth observation data development, management, and exploitation since the early 1970s. It has become a world leader in synthetic aperture radar data collection, operations, and services with RADARSAT-1, strengthened further with the launch of RADARSAT-2. The initiatives described below provide an overview of the planning over the next three years.

Ongoing Initiatives

In the coming years, the CSA's focus will mainly be on SCISAT-1 RADARSAT-1 and RADARSAT-2 data development, management, and exploitation as well as the design of a next-generation radar satellite constellation; continuing leadership in innovative atmospheric instrumentation, and associated data analysis and modeling; participation in the European Space Agency's (ESA) Earth observation programs and projects; and, pursue the CHINOOK mission with its stratospheric wind study instrument project (SWIFT).

Emerging Initiatives

Among emerging priorities, the CSA continues its evaluation of the merits of the Polar Communications and Weather (PCW) satellite mission, which is planned to provide unique temporal data with high spatial resolution over the whole northern circumpolar area. The data generated by CHINOOK and PCW are expected to lead to significant advances in weather and climate prediction models and improve the accuracy of operational weather prediction in the North, over North America, and globally. This mission represents the first opportunity for Canada to contribute space-derived weather data to the international meteorological community.

To learn more about Earth Observation, go to:
http://www.asc-csa.gc.ca/asc/eng/satellites/default.asp?page=observation

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Space Science and Exploration (SE) Contribution to the CSA Strategic Outcome

Program Activity: Space Science and Exploration (SE)	**PLANNED SPENDING ($ in millions)**		
	2009-2010	**2010-2011**	**2011-2012**
Ongoing Priority: Understand the solar system and the universe, expand our knowledge on the constituent elements and origins of life, and strengthen a human presence in space.	143.3	117.6	103.8

The CSA helps the scientific community to answer fundamental applied science questions of importance to Canadians and ensure dynamic space science research activities in the areas of Space Astronomy, Solar System, Solar-Terrestrial Relations, and Physical and Life Sciences in space. The CSA selects, develops, and integrates initiatives that offer the most potential for socio-economic benefits for Canadians. The best ideas arising from scientific imperatives are strategically integrated with the technological capacity located within the Canadian industry. The initiatives described below provide an overview of the planning over the next three years.

Ongoing Initiatives

The CSA is participating in a series of space astronomy missions that contribute to increasing understanding of the early universe and the internal structure of Sun-like stars. The CSA is developing key components of the James Webb Space Telescope, European Space Agency's Herschel and Planck missions as well as the UVIT telescope of the Indian Space Research Organization ASTROSAT mission.

The CSA continues to maintain its international commitment and fulfill its responsibilities to the International Space Station (ISS) partnership through the provision of operational, training, logistical, support, and engineering services for the Mobile Servicing System. Canadian scientists will continue using Canada's allocation on (ISS) to carry out basic and applied microgravity research on fluid physics, human physiology, and materials processing. Canadian astronauts will perform science experiments on behalf of Canadian and international research communities and will continue to participate in the assembly of the ISS.

Emerging Initiatives

Fourteen nations including Canada have contributed to the drafting of the Global Exploration Strategy (GES), a planning guide for future international space exploration missions. The Long Term Space Plan will clarify Canada's role and contribution to the international exploration roadmap. The exploration of the moon is currently the main focus of our international partners. The CSA foresees science-driven missions including technological components to explore the surface of the moon. Tangible benefits to Canadians on Earth are expected in areas such as energy and the environment.

To learn more about Space Science and Exploration, go to:
http://www.asc-csa.gc.ca/asc/eng/sciences/default.asp and,
http://www.asc-csa.gc.ca/asc/eng/exploration/default.asp

Satellite Communications (SC) Contribution to the CSA Strategic Outcome

Program Activity: Satellite Communications (SC)	**PLANNED SPENDING ($ in millions)**		
	2009-2010	**2010-2011**	**2011-2012**
Ongoing Priority: Provide all Canadians with the means to participate in and fully benefit from the global information age.	20.3	14.9	9.9

Satellite technologies have dramatically changed the world of communications in the 80's. By offering instantaneous global access and global broadcasting, these technologies have begun to erase the notion of distance, bringing remote regions into a global village and enabling new business models based on broadband services, enhanced personal communications, global navigation, and positioning and localization services. The initiatives described below provide an overview of the planning over the next three years.

Ongoing Initiatives

With the launch of Anik F2 in 2004, Canada's rural and remote areas are closer than ever to benefiting from services using broadband (Ka-band) capabilities. One of CSA's main focus is to optimise the use of the government's Ka-band Capacity Credit. Another priority consists of finalizing the development of Cascade, an experimental high-speed, high-capacity space messaging payload that is of interest to resource exploration firms, industry, and remote research communities. At the same time, Canada remains a key partner for ESA's Satellite Communications' programs such as Galileo and ARTES.

Emerging Initiatives

The CSA will investigate on how to increase the communications capabilities available in northern Canada. Improved satellite communications and ground terminals would enhance Canada's security and sovereignty and better serve the northern communities. A number of concepts will be studied to support the Arctic priorities recently identified by the Government of Canada, particularly the need to provide full-time coverage over Canada up to the North Pole. Supporting next generation payload, such as the Q/V-band broadband satellite system is also planned as are the use of microsatellites for sovereignty missions supporting maritime surveillance.

To learn more about Satellite Communications, go to:
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	2009-2010	**2010-2011**	**2011-2012**
Ongoing Priority: Provide leadership, coordination or support to EO, SE, and SC Program Activities through activities that are generic.	53.8	55.6	57.8

Generic Technological Activities support all three science and technology program activities by developing high-risk technologies. For all of CSA programs, efforts are deployed in concert with industry, academia, and not-for-profit organizations. These activities are supported by world-class, cost-effective environmental space qualification testing and services. In consultation with industry and other stakeholders, technology priorities road maps help guide CSA's technology programs. The initiatives described below provide an overview of the planning over the next three years.

Ongoing Initiatives

Through a variety of procurement mechanisms, the Space Technology Development Program encourages industry and research organizations to propose innovative technologies, retire risk on the critical technologies required for future missions of Canadian interest, and contribute to the enhancement of Canadian capabilities. The transfer and commercialization of space technologies and their applications to other sectors of the economy enhances Canada's industrial competitiveness. This is achieved by managing the CSA portfolio of patents and intellectual property licenses, as well as by conducting commercialization assessments.

The CSA ensures the development and maintenance of scientific and technical expertise required to initiate projects and provide support on a matrixed basis to Earth Observation, Space Science and Exploration and Satellite Communications missions.

The David Florida Laboratory (DFL) continues to support space mission development by offering world-class and cost-effective environmental space-qualification services for the assembly, integration, and testing of spacecraft systems for CSA's programs as well as for national and international clients.

Emerging Initiatives

Requests for proposals to be issued by the Space Technology Development Program will be guided by a thorough analysis of future Canadian space missions and technological needs carried out by internal and external experts. The identified future missions/innovative technologies will be in the following niche areas: Communications Technologies, Sensor Technologies, Robotics, System Engineering Technologies, Platform Technologies and Ground Segment.

To learn more about Generic Technological Activities, go to: http://www.asc-csa.gc.ca/eng/programs/default.asp, and, http://www.asc-csa.gc.ca/asc/eng/dfl/default.asp

Space Awareness and Learning (AL) Contribution to CSA Strategic Outcome

Program Activity: Space Awareness and Learning (AL)	**PLANNED SPENDING ($ in millions)**		
	2009-2010	**2010-2011**	**2011-2012**
Ongoing Priority: Further public understanding and engagement with regards to space-related issues, ultimately leading to improving the scientific literacy of Canadians.	8.9	8.8	8.8

The Government of Canada is committed to building a 21st century economy through its Science and Technology Strategy which encourages Canadians to pursue careers in science and technology. The CSA is working with a growing number of partners to enhance public understanding and engagement, especially among youth and their families, through a range of learning and awareness initiatives. The science and technology literacy is meant to influence young Canadians towards science and technology career choices. The initiatives described below provide an overview of the planning over the next three years.

Ongoing Initiatives

Through learning activities, the CSA has forged solid relationships with other government departments, science centres and museums, youth and science associations, the private sector, and the education community across Canada. Through the learning components of the Grants and Contributions Program, the CSA enhances expertise of Canadian scientists, engineers and physicians in space science, space technology and space medicine. Awareness activities foster Canadians' interest and engagement in science and technology by sharing our discoveries and breakthroughs in meaningful ways that communicate their positive impact on the daily lives of Canadians.

To learn more about Space Learning and Awareness activities, go to:
http://www.asc-csa.gc.ca/asc/eng/educators/default.asp

Internal Services Contribution to CSA Strategic Outcome

Program Activity: Internal Services	**PLANNED SPENDING ($ in millions)**		
	2009-2010	**2010-2011**	**2011-2012**
Ongoing Priority: Implement the government's commitment to modern public service in accordance with the MAFs expectations.	43.0	41.6	41.7

Ongoing Initiatives

Based on Management Accountability Framework assessments, Corporate Risk assessments and Internal Audit recommendations, the CSA continues to improve its management practices. In 2009-2010, the main priorities will consist of aligning the strategies, planning priorities, funding levels, and operations under the CSA Long Term Space Plan; continuing the implementation of the Integrated Corporate Human Resources Plan; and, beginning the implementation of the Government Project Management Policy.

Generic Technological Activities (GTA) Contribution to the CSA Strategic Outcome

Program Activity: Generic Technological Activities (GTA) in support of EO, SE and SC	**PLANNED SPENDING** ($ in millions)		
	2009-2010	**2010-2011**	**2011-2012**
Ongoing Priority: Provide leadership, coordination or support to EO, SE, and SC Program Activities through activities that are generic.	53.8	55.6	57.8

Generic Technological Activities support all three science and technology program activities by developing high-risk technologies. For all of CSA programs, efforts are deployed in concert with industry, academia, and not-for-profit organizations. These activities are supported by world-class, cost-effective environmental space qualification testing and services. In consultation with industry and other stakeholders, technology priorities road maps help guide CSA's technology programs. The initiatives described below provide an overview of the planning over the next three years.

Ongoing Initiatives

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1.5 RISKS ANALYSIS

Strategic Context of the Canadian Space Agency

International Context

Space is recognized by industrialized nations as an essential and strategic tool to meet their social, economic, and foreign policy objectives. Accordingly, many governments around the world of traditional and emerging spacefaring nations are increasing their investments in space activities, looking for increased consolidation and advancement of their space capabilities. In terms of public expenditures in the space sector, Canada has been losing ground over the past decade when compared with other space nations.[2]

International cooperation is critical to the implementation of the Canadian Space Strategy (CSS). Working in partnership with other spacefaring nations, Canada can leverage its resources and maximize its return on investment, sharing technical expertise, knowledge, and infrastructure, while gaining access to areas where Canada has chosen not to invest due to limited resources. In addition, there are increasing concerns over issues such as space debris and climate change. These transcend national borders and favour increasing cooperation between nations with common goals. Canada's space infrastructure must not only meet national strategic needs, but must also play a tangible role in responding to issues of interest to the international community.

Canada is regarded as a reliable partner that possesses unique technical and scientific capabilities, and as a nation that can meaningfully contribute to the initiatives of foreign space agencies. In particular, emerging spacefaring countries in Asia and South America may offer great potential for future cooperation. Thus, Canada continues efforts to gain a foothold in these emerging markets. It is of paramount importance that the Canadian Space Agency continues its work with stakeholders to ensure the competitiveness of our research communities and industries with world markets. Canada's space industry is perceived as internationally competitive. This was confirmed by the results of the 2007 Annual Survey of the Canadian Space Sector. With yearly revenues of $2.499 billion, 40% ($1.003 billion)[3] comes from exports representing the industry's total revenues. The main destinations of Canadian space exports are as follows: 49.7% to the U.S., 28.2% to Europe, and 11.9% to Asia.[4]

National Context

The Canadian Space Agency recognizes that the best means of turning scientific and technological advancements into innovative products and services is through partnerships with Canadian universities and industry. With its highly skilled workforce, the space industry in Canada not only generates wealth in our economy, but also provides competitive products and services. Given that the national market is relatively small, it is

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[2] EUROCONSULT – CONFERENCE BOARD OF CANADA: *Socio-economic Study and Policy Analysis of Future Canadian Investments in Spaced-based Robotics Opportunities* (2006)
[2] CSA: State of the Canadian Space Sector 2007; Overall Revenues, Domestic v. Export Revenues
[3] CSA: State of the Canadian Space Sector 2007; Export Revenues

critical that the Canadian space industry be able to leverage foreign investments and generate export sales. Capitalizing on export revenue depends on the industry's ability to commercialize highly competitive products and services, and establish local partnerships.

In 2007, Satellite Communications continued to generate the lion's share of the Canadian space sector's revenues totaling $2.499 billion. A breakdown of the revenues by sectors of activity is as follows: Satellite Communications: 73.3% ($1,831 billion); Earth Observation: 6.7% ($167.9 million); Navigation: 6.2% ($154.9 million); Robotics: 4.1% ($102.9 million); Space Science: 9.1% ($228 million); and all space-related activities in other areas: $12.7 million.[5] While small in the number of firms, the Canadian space sector is knowledge-intensive and is at the forefront of research and innovation. Building on the strengths of 6,481 skilled workers, including 2,144 highly qualified personnel,[6] Canadian firms have acquired world-leading capabilities in niche areas such as Earth observation, space robotics, satellite communications, and navigation.

Government Context

1- The Canadian Science and Technology Strategy

The objective of the Government Science and Technology Strategy is to "make Canada a world leader in science and technology and a key source of entrepreneurial innovation and creativity". In order for Canada to achieve this objective, the S&T Strategy identifies the following three underlining conditions for success: a strong private-sector commitment to S&T, a strengthened knowledge base and, be a magnet for talent. The table below depicts how the CSA aligns its strategic actions with guiding principles of S&T Strategy in order to create a Canadian space advantage:

S&T Strategy Principles	Examples of Strategic Actions for 2009-2012
Promoting world-class excellence	- Develop Signature Technologies - Participate in Global Exploration Missions
Focusing on priorities	- Implement the CSA Long Term Space Plan - Implement EO, SE and SC program activity road maps
Encouraging partnerships	- Enhance user-oriented approach with other Departments - Strengthen industry and academia cooperation - Leverage international partnerships
Enhancing accountability	- Fully implement result-based management - Implement new project management policy

To learn more about the Canadian Science and Technology Strategy, go to:
http://www.ic.gc.ca/epic/site/ic1.nsf/en/h_00231e.html

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[5] CSA: *State of the Canadian Space Sector 2007; Revenues by Sector of Activity*
[6] CSA: *State of the Canadian Space Sector 2007; Space Sector Workforce, Workforce Groups*
http://www.asc-csa.gc.ca/eng/industry/state.asp

2- The Canadian Space Strategy

Approved by the Government of Canada in February 2005, the Canadian Space Strategy was developed in full consultation with Government of Canada organizations and Canadian stakeholders. It is the framework that guides all CSA programs and provides our stakeholders and partners with insight on Canada's strategic directions. While the Canadian Space Strategy preceded the S&T Strategy it embraces the principles of world-class excellence, and contains a similar set of priorities and innovative national partnerships. The CSA implements the Canadian Space Strategy priorities through the following five building blocks:

1) A strong science capacity
2) A proficient technology base
3) Dynamic space industry focused on expanding markets
4) National and international partnerships
5) Qualified test and operations infrastructures

To learn more about the Canadian Space Strategy, go to:
http://www.asc-csa.gc.ca/eng/publications/default.asp#strategy

3- The Long Term Space Plan

In order to move forward with a renewed impetus to sustain and enhance Canada's space advantage, in 2008-2009 the CSA carried a series of consultations with its stakeholders and partners. A Long Term Space Plan will be presented to Government for consideration in 2009, and will propose investments to achieve its strategic and public policy interests with recommendations for Canada's role and participation in future space exploration activities.

4- Integrated Corporate Human Resources Management

In June 2007, the CSA approved an Integrated Corporate Human Resources Plan to guide its human resources planning, recruitment, retention, development and succession planning initiatives over the next three years. An integrated human resources plan is an essential tool to assist the CSA in its recruitment, development and retention activities, assuring it has the highly educated and highly qualified and motivated workforce required to meet its current needs, and to be ready to take on challenging space missions in the future.

A Human Resources analysis of the CSA's workforce indicated that the Agency had attained a degree of stability in 2005-2006 with a growth rate of 4.4% and a turnover rate of 3.2%. The workforce distribution showed that the average age of employees at the CSA is 42 years compared to 45 years in the federal Public Service. The analysis also revealed that 60% of the CSA's workforce has less than 10 years of service in the government making the majority of CSA's workforce ineligible for retirement.

The Integrated Corporate Human Resources Plan identified strategies to address the following challenges:

- Organizational needs and recruitment
- Management capacity
- Competency-based management and succession development
- Workplace well-being

5- Corporate Risk Management

Every year, the CSA identifies and assesses its corporate risks. Mitigation action plans have been developed to address each of the corporate risks identified as the highest priorities in 2009-2010:

Integration and Implementation: Capacity of CSA to align its strategies, planning, priorities, funding levels, operations and capacity to deliver, and to obtain clear understanding and buy-in from managers and staff at all levels.

Trust in CSA Governance: Capacity of CSA in gaining and maintaining the confidence of the Minister, Central Agencies and stakeholders in the governance and effective management of its affairs in accordance with the public service values and ethics.

Workforce: Capacity of CSA to hire and maintain a qualified workforce of public servants to deliver its mandate within the government legislative frameworks, policies and rules.

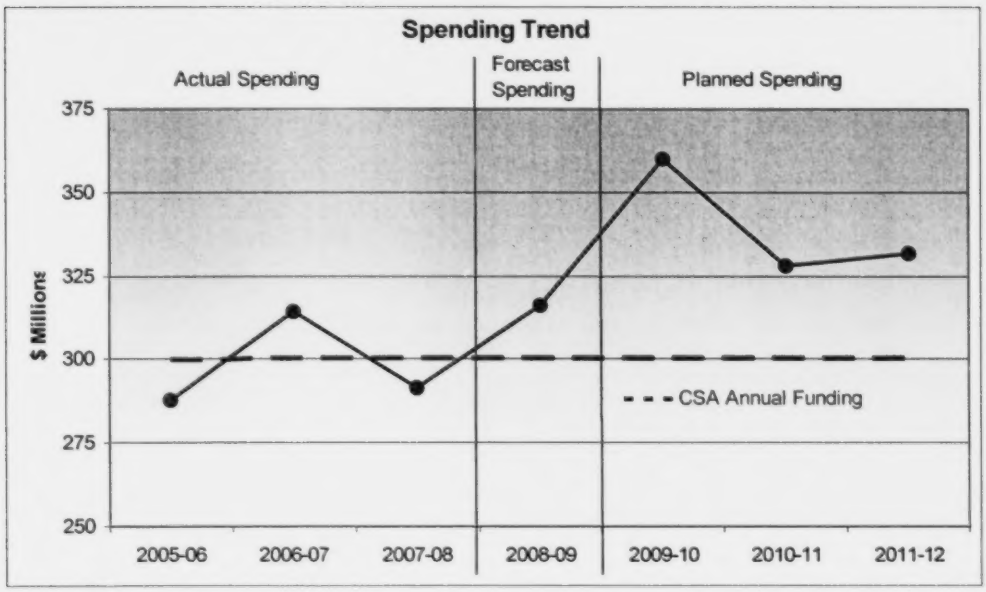
1.6 EXPENDITURE PROFILE

1.6.1 Departmental Planned Spending and Full-Time Equivalents (FTES)

($ in millions)	Forecast Spending 2008-2009	Planned Spending 2009-2010	Planned Spending 2010-2011	Planned Spending 2011-2012
Space Based Earth Observation (EO)	145.2	**85.8**	85.4	105.3
Space Science and Exploration (SE)	129.8	**143.3**	117.6	103.8
Satellite Communications (SC)	30.0	**20.3**	14.9	9.9
Space Awareness and Learning (AL)	8.9	**8.9**	8.8	8.8
Generic Technological Activities (GTA) in support of EO, SE, SC	54.3	**53.8**	55.6	57.8
Internal Services	N/A	**43.0**	41.6	41.7
Budgetary Main Estimates (gross)	368.2	**355.1**	323.8	327.2
Non-Budgetary Main Estimates (gross)	-	-	-	-
Less: Respendable revenue	-	-	-	-
Total Main Estimates	368.2	**355.1**	323.8	327.2
Adjustments [1]:				
Supplementary Estimates				
Operating carry forward	9.3			
Capital carry forward	0.3			
Collective agreements compensation	4.6			
Reinvestment of royalties from the sale of RADARSAT-1 data	-	**4.1**	4.1	4.1
ARLU				
Reprofiling of funds	(65.4)			
Total adjustments	(51.3)			
Total Planned Spending	316.9	**359.2**	327.9	331.3
Full-Time Equivalents	628.8	**711.2**	704.2	697.9

Notes:

1. Adjustments are to accommodate approvals obtained since the Main Estimates and include Budget Initiatives, Supplementary Estimates, etc.
2. Measures announced in the Budget 2009 are not reflected in the RPP 2009-2010 and will be identified in a subsequent estimates document.
3. Due to rounding, decimals may not add up to totals shown.



The CSA's annual funding of $300 millions is the same since 1999. However, the spending fluctuates from year to year for two reasons:

First, incremental funds for the RADARSAT Constellation program following the government's decision to provide CSA with additional $111 millions over five years (2005-2006 to 2009-2010) for the development of the next generation advanced radar remote sensing satellites by Canadian space industry; and second, cumulative impact of the reprofiling of funds due to project and program risk management decisions associated with space technology development, long term development cycle, work schedule uncertainties, and implementation delays.

1.6.2 Voted and Statutory Items

Vote or Statutory Item	Truncated Vote or Statutory Wording	2008-2009 Main Estimates ($ in millions)	**2009-2010 Main Estimates** ($ in millions)
25	Operating expenditures	193.1	**208.0**
30	Capital expenditures	118.1	**90.1**
35	Grants and contributions	46.4	**47.1**
(S)	Contributions to employee benefit plans	10.6	**9.9**
	Total Agency	**368.2**	**355.1**

Note: Measures announced in the Budget 2009 are not reflected in the RPP 2009-2010 and will be identified in a subsequent estimates document.

SECTION 2: ANALYSIS OF PROGRAM ACTIVITIES BY STRATEGIC OUTCOME

2.1 PROGRAM ACTIVITIES IN EARTH OBSERVATION, SPACE SCIENCE AND EXPLORATION, AND SATELLITE COMMUNICATIONS

Program Activity: Space Based Earth Observation

Program Activity Priority: The program activity objective is to develop and operationalize the use of space Earth Observation (EO) for the benefit of Canadians, especially in the fields of environment, resource and land use management, as well as security and foreign policy.

SPACE BASED EARTH OBSERVATION (EO) PROGRAM ACTIVITY PERFORMANCE MEASUREMENT	
Expected Result #1	**Performance Indicators**
The benefits of activities involved in Earth Observation from space serve Canadian users in the fields of environment, resource and land-use management, and security and sovereignty.	1. Proportion of active missions relative to the total number of missions supported by Canada in the EO priority areas. 2. Number of technological/scientific applications developed as a result of CSA's participation in space missions and/or support to projects/activities in EO. 3. Number of technological/scientific uses as a result of CSA's participation in space missions and/or support to projects/activities in EO.
Planning and Reporting Continuity: RPP 2008-2009 and DPR 2007-2008: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament	

RESOURCES	2009-2010	2010-2011	2011-2012
FINANCIAL ($ in millions)	85.8	85.4	105.3
HUMAN (FTEs)	78.0	64.5	59.8

Summary of the Planning Highlights for Space Based Earth Observation

- RADARSAT-1 operations will continue with the usual high level of performance for satellite operations and quality image production while RADARSAT-2, launched in December 2007, will supply to Canadian government users improved images which have been prepaid by the government $445 million investment in the satellite.

- Through the Earth Observation Application Development and the Government Related Initiatives Programs, the CSA will continue satellite data application development and use to support the growth of Earth observation capabilities within the Canadian government departments and agencies, and the service industry.

- The CSA will continue to develop the RADARSAT Constellation mission, to meet the Canadian Government needs, particularly for maritime surveillance, disaster management and ecosystem monitoring.

- Canadian companies will develop advanced space-borne instruments and user-oriented applications through participation in the European Space Agency programs.

Benefits for Canadians

Earth observation missions drive many of the changes that are improving our quality of life by helping our government deliver on priorities such as protection of the environment, sustainable development, management of natural resources, understanding climate change, monitoring air quality, and providing support for disaster management. For instance, space based Earth observation enables monitoring of the environment with unparalleled coverage and scope, enhancing our forecasting capabilities and our understanding of environmental systems. Earth observation data are used for sustainable management and development of natural resources, land use, fisheries and agriculture.

EO missions are also critical to security and sovereignty, offering cost-effective, wide-area surveillance of land and maritime environments that are difficult to access, such as coastal approaches and the Northwest Passage.

Among Canada's government users benefiting from EO data are Environment Canada, Fisheries and Oceans Canada, the Canadian Ice Service, Natural Resources Canada, the Department of National Defence, and the provinces and territories.

To learn more about the Earth Observation Program Activity, go to:
http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

Program Activity: Space Science and Exploration

Program Activity Priority: The program activity objective is to better understand the Solar System and the Universe; expand our knowledge on the constituent elements and origins of life; and strengthen a human presence in space. In doing so, the CSA will sustain and increase Canada's contribution to humankind's scientific knowledge, to the exploration of our solar system and the Universe and to the development of related technologies.

SPACE SCIENCE AND EXPLORATION (SE) PROGRAM ACTIVITY PERFORMANCE MEASUREMENT	
Expected Result #1	**Performance Indicators**
Participation in Canadian and international missions expands the scientific knowledge base made available to Canadian academia and R&D communities in the areas of astronomy, space exploration and solar-terrestrial relations, as well as in physics and life sciences.	1. Proportion of active missions relative to the total number of missions supported by Canada in the SE priority areas. 2. Number of scientific/technological applications developed as a result of CSA's participation in space missions and/or support to projects/activities in SE. 3. Number of peer-reviewed papers produced in academia and the R&D community in Canada recognizing CSA's support through its participation in space missions and/or support to projects/activities in SE.
Planning and Reporting Continuity: RPP 2008-2009 and DPR 2007-2008: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament	

RESOURCES	2009-2010	2010-2011	2011-2012
FINANCIAL ($ in millions)	143.3	117.6	103.8
HUMAN (FTEs)	191.9	183.1	178.2

Summary of the Planning Highlights for Space Science and Exploration

- Canada is participating in the James Webb Space Telescope (JWST), a major international facility-class space observatory that will be launched in 2013. The JWST is a successor to the highly successful Hubble Space Telescope. Canada is responsible for the design and construction of the Fine Guidance Sensor (FGS) which ensures the very precise pointing of the telescope and the provision to the

international astronomical community of simultaneous images. Through the CSA's contribution Canadian astronomers will have guaranteed access to 5% of the observing time on the telescope.

- The CSA will continue to support the International Space Station (ISS) assembly and maintenance operations and will initiate operational use of Dextre as a new tool to effect repairs on the ISS. In return Canada gained rights to use the ISS resources and as the crew size increases, CSA is working to fully exploit the long-term access to a space environment as a platform for microgravity research on fluid physics, human physiology, and materials processing.

- The CSA will maintain its human space flight expertise. Canadian astronauts Robert Thirsk and Chris Hadfield are now on training. One is in preparation for the first Canadian long-duration space flight on the ISS in May 2009. Canadian astronaut Julie Payette has been assigned to a Space Shuttle flight in the summer of 2009. To ensure that Canada has enough astronauts to fully take advantage of its investment in the ISS, the CSA will conclude its recruitment campaign with the selection of two new astronauts by May 2009.

- The CSA will continue to participate actively to the International Space Exploration Coordination Group that was created in 2007 to promote collaboration among space agencies for the exploration of the moon and Mars exploration to various space agencies around the world. The CSA established exploration core activities will benefit from additional funding of $110 million over three years announced in budget 2009 to contribute to the development of terrestrial prototypes for space robotic vehicles, such as the Mars Lander and Lunar Rover, and for the further development of other technologies and space robotics. These prototypes will be tested here on Earth in terrestrial analogue missions.

Benefits for Canadians

In today's context of environmental change and resource depletion, fundamental and applied research in physical and life sciences and in space exploration has great potential to bring about socio-economic benefits in ways that will greatly improve how we live, prosper, and evolve on our planet. For instance, the development of a surface mobility capability on the Moon will require the use of solar-powered electrical propulsion vehicles, which, in turn, could well lead the way toward spin-off commercialization of green technologies for the transport vehicles of the future. Space exploration, science and technology endeavours, which often involve international partners, will continue to position the CSA to play an influential role in building strong and mutually beneficial partnerships with an increasing number of space faring countries. In striving to become one of the most advanced, connected and innovative nations in the world, Canada offers and shares tremendous opportunities for the prosperity of global commerce and the safety of the global community through the peaceful use of space.

To learn more about Space Science and Exploration Program Activity, go to:
http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

Program Activity: Satellite Communications

Program Activity Priority: The program activity objective is to provide all Canadians with the means to participate and fully benefit from the global information age.

SATELLITE COMMUNICATIONS (SC) PROGRAM ACTIVITY PERFORMANCE MEASUREMENT	
Expected Result #1	**Performance Indicators**
State-of-the-art systems and applications are developed to satisfy the needs of the Canadian government and population in order to ensure that Canada remains a world leader in satellite communications.	1. Proportion of active missions relative to the total number of missions supported by Canada in the SC priority areas. 2. Number of technological applications developed as a result of CSA's participation in space missions and/or support to projects/activities in SC.
Planning and Reporting Continuity: RPP 2008-2009 and DPR 2007-2008: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament	

RESOURCES	2009-2010	2010-2011	2011-2012
FINANCIAL ($ in millions)	20.3	14.9	9.9
HUMAN (FTEs)	14.2	13.1	13.1

Summary of the Planning Highlights for Satellite Communications

- The CSA will work to optimise the use of the Government of Canada capacity credit for broadband telecommunications services in the North. Additional demonstration of Ka-band technology will improve the use of the Anik F2 by northern communities for trials of innovative services by government departments. The contract for ground segment upgrades and the procurement for the terminals are expected to be completed by the end of 2009. The planning of the utilization phase for the years 7 and 8 is ongoing. A Call for Interest to potential end-users in the northern communities will be issued in summer 2009.
- The CSA will complete the assessment of the requirements of the Canadian government users for a polar satellite system as part of a joint study with Department of National Defence and Environment Canada. The Concept of the Polar Communications and Weather Mission is to put a constellation of satellites in a highly elliptical orbit over the North Pole to monitor weather and provide communication services in the Arctic region. The weather component of the mission falls within the Earth Observation program activity, while the polar communication falls within the Satellite Communication program activity.

- In 2004-2005, as part of the CASSIOPE Mission Contribution Program, the CSA initiated the development and demonstration of the Cascade telecommunications payload on a small satellite spacecraft. This small satellite spacecraft is fully designed and constructed by Canadian companies. Environmental testing of the spacecraft will be completed in 2009 with the launch scheduled for the end of the year. Cascade is the precursor of a communication satellite constellation that will help position Canadian industry on the international market, both as a supplier of advanced components and as a service provider of high-volume, high-data-rate telecommunications anywhere in the world.

Benefits for Canadians

Satellite Communications facilitates the linking of all Canadians by increasing the delivery of non-commercial services to Canadian remote communities, and support federal government department's program delivery.

Space infrastructure allows access and dissemination of timely health, cultural, security and safety related information to all Canadians wherever they live in Canada. Satellite communication is essential to provide Canadians living in remote areas with timely access to expert knowledge and expertise related to health and education through a range of non-commercial services including: e-government, e-learning, tele-justice, tele-education, as well as tele-medicine in areas such as tele-psychiatry, tele-radiology, tele-surgery, and tele-consultations.

To learn more about Satellite Communications Program Activity, go to:
http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

2.1.1 Program Sub-Activities in Earth Observation, Space Science and Exploration, and Satellite Communications

All three program activities, Earth Observation, Space Science and Exploration, and Satellite Communications, share the same three program sub-activities: Enabling Research, Space Mission Development and Space Mission Operations. The program sub-activities are measured with the same expected results and indicators which demonstrate how the combination of the three levels of its projects and activities' life cycle contributes synergistically across program activities to the achievement of the S&T Strategy's objective: "make Canada a world leader in science and technology and a key source of entrepreneurial innovation and creativity". In doing so, this level of performance measurement embraces the S&T Strategy principle: "enhancing accountability".

Program Sub-Activity: Enabling Research – EO, SE and SC

Objective: Provide leadership, coordination or support to Earth Observation, Space Science and Exploration, and Satellite Communications applied research and experimental development in line with the CSA's priorities and stakeholders' expectations in order to increase the knowledge base and devise new applications through space missions, and to allow the transfer of intellectual property and proven technologies to Canadian industry, academia, and government organizations.

Expected Result #1	Performance Indicators
New project/mission concepts that progress to subsequent development phases related to Agency's priorities.	1. Ratio of the number of new concepts presented to the number of new concepts retained for subsequent phase. 2. Quality of the concepts retained based on the average evaluation rating obtained according to the Priority Ranking Framework.
Expected Result #2	**Performance Indicators**
The CSA's in-house personnel are highly qualified, with recognized expertise, and are supported by a high-technology infrastructure that is suited to all Enabling Research projects/missions.	1. Number of consulting requests received by CSA personnel from external sources such as the private sector, academia and other space agencies.

ENABLING RESEARCH RESOURCES		2009-2010	2010-2011	2011-2012
FINANCIAL ($ in millions)	Earth Observation	23.3	27.4	27.2
	Space Science and Exploration	44.5	42.5	42.4
	Satellite Communications	14.7	10.9	8.9
HUMAN (FTEs)	Earth Observation	14.6	14.6	14.6
	Space Science and Exploration	47.6	43.7	39.3
	Satellite Communications	0.0	0.0	0.0

Program Sub-Activity: Space Mission Development – EO, SE and SC

Objective: Provide coordination or support to the development of Earth Observation, Space Science and Exploration, and Satellite Communications space missions in line with CSA's priorities and stakeholders' expectations through the definition, critical design, manufacturing, integration, testing and delivery phases leading to launch and early operations of space systems.

Expected Result #1	**Performance Indicator**
Space mission proposals that efficiently, effectively and economically progress to subsequent operations phases in accordance with objectives, requirements, initial or revised specifications.	1. Percentage of projects requiring more than one EPA (Effective Project Approval) or an amendment to initial EPA over the total number of projects.
Expected Result #2	**Performance Indicators**
The CSA's in-house personnel are highly qualified, with recognized expertise, and are supported by a high-technology infrastructure that is suited to all Space Mission Development projects.	1. Rate of expertise matrix support to all of CSA's program activities.

SPACE MISSION DEVELOPMENT RESOURCES		**2009-2010**	**2010-2011**	**2011-2012**
FINANCIAL ($ in millions)	**Earth Observation**	48.2	43.8	64.3
	Space Science and Exploration	43.4	19.8	8.5
	Satellite Communications	5.6	4.0	0.9
HUMAN (FTEs)	**Earth Observation**	36.9	22.6	17.7
	Space Science and Exploration	16.9	14.4	14.4
	Satellite Communications	14.2	13.1	13.1

Program Sub-Activity: Space Mission Operations – EO and SE

Objective: Provide coordination or support to the operations of Earth Observation, and Space Science and Exploration space missions in line with the CSA's priorities and stakeholders' expectations through the development and conduct of on-orbit operations, system maintenance and logistic support, as well as data handling and delivery.

Expected Result #1		Performance Indicators		
The CSA's in-house personnel are highly qualified, with recognized expertise, and are supported by a high-technology infrastructure that is suited to all Space Mission Operations activities.		1. Annual rate of investment in maintenance and improvement of the infrastructure required for missions in operation phases. 2. Quality of the internal expertise specializing in advice and technology-watch to ensure the successful flow of missions reaching operation phases.		
SPACE MISSION OPERATIONS RESOURCES		**2009-2010**	**2010-2011**	**2011-2012**
FINANCIAL ($ in millions)	**Earth Observation**	14.2	14.3	13.8
	Space Science and Exploration	55.4	55.3	52.8
HUMAN (FTEs)	**Earth Observation**	26.5	27.3	27.5
	Space Science and Exploration	127.5	125.0	124.5

2.2 TECHNOLOGY DEVELOPMENT PROGRAM ACTIVITY

Program Activity: Generic Technological Activities in support of Earth Observation, Space Science and Exploration, and Satellite Communications

Program Activity Priority: Provide leadership, coordination or support to Earth Observation, Space Science and Exploration, and Satellite Communications through activities that are generic in their nature since they contribute to all three program activities.

GENERIC TECHNOLOGICAL ACTIVITIES (GTA) IN SUPPORT OF EO, SE AND SC PROGRAM ACTIVITY PERFORMANCE MEASUREMENT	
Expected Result #1	**Performance Indicators**
Canada's industrial technological capabilities can meet the needs of future space missions and activities.	1. Ratio of the number of priority technologies identified for future EO, SE and SC missions to the number of priority technologies developed in GTA. 2. Number of priority technologies supported that are ready to be used.
Planning and Reporting Continuity: RPP 2008-2009 and DPR 2007-2008: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament	

RESOURCES	2009-2010	2010-2011	2011-2012
FINANCIAL ($ in millions)	53.8	55.6	57.8
HUMAN (FTEs)	137.7	151.8	156.1

Summary of the Planning Highlights of Generic Technological Activities

- Through a variety of procurement mechanisms, the Space Technology Development Program will encourage industry and research organizations to propose innovative technologies, retire risk on the critical technologies required for future missions of Canadian interest, and contribute to the enhancement of Canadian capabilities.
- The CSA will manage its portfolio of patents and intellectual property licenses and conduct commercialization assessments in order to support the transfer of space technologies and their applications to other sectors of the economy and enhance Canada's industrial competitiveness.
- The David Florida Laboratory will continue to provide world-class and cost-effective environmental space qualification services for the assembly, integration and testing of spacecraft systems to CSA's programs, as well as national and international clients.

Benefits for Canadians

Through its R&D investments and the resulting transfers of applications to the private and public sectors, the CSA's programs and activities attract highly educated and highly skilled labour that contributes to Canada's knowledge-based economy; helps enhance the Canadian space industry's competitiveness by encouraging dynamic trade relationships with other nations; and increases Canada's ability to compete in the global marketplace.

To learn more about Generic Technological Activities Supporting Earth Observation, Space Science and Exploration, and Satellite Communications Program Activity, go to: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

2.2.1 Technology Development Program Sub-Activities

This program activity has two program sub-activity levels: Enabling Research and Space Mission Development. The combination of the two levels of its projects and activities' life cycle contributes synergistically to the achievement of the S&T Strategy's objective: "make Canada a world leader in science and technology and a key source of entrepreneurial innovation and creativity". In doing so, this level of performance measurement embraces the S&T Strategy principle: "enhancing accountability".

Program Sub-Activity: Enabling Research – GTA in support of EO,SE and SC

Objective: Provide leadership, coordination or support EO, SE and SC applied research and experimental development in line with the CSA's priorities and stakeholders' expectations.

Expected Result #1	Performance Indicator
Space technology concepts that support projects/missions related to Agency's priorities.	1. Rate of adherence to the technology development plan/track records.
Expected Result #2	**Performance Indicators**
Canadian industries and research organizations that are actively involved in space R&D.	1. Number of requests received vs. the number of requests accepted. 2. Number of requests received vs. the number of requests funded.

RESOURCES	2009-2010	2010-2011	2011-2012
FINANCIAL ($ in millions)	46.2	46.0	46.0
HUMAN (FTEs)	94.7	108.8	113.1

Program Sub-Activity: Space Mission Development – GTA in support of EO, SE and SC

Objective: Provide coordination or support to the development of EO, SE and SC space missions in line with CSA's priorities and stakeholders' expectations through the definition, critical design, manufacturing, integration, testing and delivery phases leading to launch and early operations of space systems.

Expected Result #1	Performance Indicators
The CSA's in-house personnel are highly qualified, with recognized expertise, and are supported by a high-technology infrastructure that is suited to all Space Mission Development projects.	1. Number of aerospace related missions, projects/activities supported by David Florida Laboratory (DFL) facilities.

RESOURCES	2009-2010	2010-2011	2011-2012
FINANCIAL ($ in millions)	7.6	9.6	11.8
HUMAN (FTEs)	43.0	43.0	43.0

2.3 SPACE AWARENESS AND LEARNING PROGRAM ACTIVITIES

Program Activity: Space Awareness and Learning

Program Activity Priority: The program activity objective is to further public understanding and engagement with regards to space related issues, ultimately leading to improving the scientific literacy of Canadians by carrying out a national awareness and learning initiative in support of the Canadian Space Program.

SPACE AWARENESS AND LEARNING PROGRAM ACTIVITY PERFORMANCE MEASUREMENT			
Expected Result #1	**Performance Indicator**		
Targeted level of awareness of space among Canadians is reached.	1. Survey results obtained every 3 years.		
Planning and Reporting Continuity: RPP 2008-2009 and DPR 2007-2008: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament			
RESOURCES	**2009-2010**	**2010-2011**	**2011-2012**
FINANCIAL ($ in millions)	8.9	8.8	8.8
HUMAN (FTEs)	26.0	24.0	24.0

Summary of the Planning Highlights for Space Awareness and Learning

- CSA will carry out two awareness campaigns, one related to Canadian astronaut missions, Dr. Robert Thirsk who will remain on the International Space Station for a stay of 6 months, and Julie Payette on the Space Shuttle Endeavour; and the other supporting the launches of Canadian satellites NEOSSAT and CASSIOPE.
- CSA will pursue professional development workshops and teaching initiatives and will expand access by primary and secondary level students and educators to space learning materials through partnered initiatives with schools and other institutions.

Benefits for Canadians

The CSA fosters science and technology literacy as a mean to influence the career choices of young Canadians towards science and technology. It also offers opportunities to enhance the expertise of Canadian scientists, engineers and physicians in space science, space technology and space medicine.

To learn more about Space Awareness and Learning Program Activity, go to:
http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

2.3.1 Space Awareness and Learning Program Sub-Activities

This program activity has two program sub-activity levels: Awareness and Learning. The combination of the two levels of projects and activities contributes synergistically to the achievement of the S&T Strategy's objective: "make Canada a world leader in science and technology and a key source of entrepreneurial innovation and creativity". In doing so, this level of performance measurement embraces the S&T Strategy principle: "enhancing accountability".

Program Sub-Activity: Awareness

Objective: Increase public awareness and understanding of how space affects and improves the quality of life.

Expected Result #1		Performance Indicator	
Target audience is reached through outreach activities.		1. Number of initiatives according to targeted audiences.	
RESOURCES	**2008-2009**	**2009-2010**	**2010-2011**
FINANCIAL ($ in millions)	5.9	5.9	5.9
HUMAN (FTEs)	21.0	19.0	19.0

Program Sub-Activity: Learning

Objective: Direct a sustained multi-dimensional and inter-active learning program to build knowledge and enhance interest in space science and technology.

Expected Result #1		Performance Indicators	
Canadian educators and students further their learning related to science and technology through the space theme.		1. Number of educators reached through professional development initiatives. 2. Number of students reached through learning activities.	
RESOURCES	**2009-2010**	**2010-2011**	**2011-2012**
FINANCIAL ($ in millions)	3.0	2.9	2.9
HUMAN (FTEs)	5.0	5.0	5.0

2.4 INTERNAL SERVICES PROGRAM ACTIVITIES

Program Activity: Internal Services

Program Activity Priority: To implement the government's commitment to modern public service management in accordance with the Management Accountability Frameworks expectations.

INTERNAL SERVICES PROGRAM ACTIVITY PERFORMANCE MEASUREMENT	
Expected Result #1	**Performance Indicator**
Internal Services provide an added value to CSA managers in the performance of their duties.	1. Internal Services provided meet standards set under government-wide policies. 2. CSA's rating against MAF criteria based on Round VI assessment.
Expected Result #2	**Performance Indicators**
The three highest priority risks identified in the CSA corporate risk profile are addressed and mitigated.	1. Mitigation action plans are implemented against the three corporate risks identified as highest priorities.
Planning and Reporting Continuity: RPP 2008-2009 and DPR 2007-2008: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament	

RESOURCES	2009-2010	2010-2011	2011-2012
FINANCIAL ($ in millions)	43.0	41.6	41.7
HUMAN (FTEs)	263.4	267.7	266.8

2.4.1 Internal Services Program Sub-Activities

This program activity has three program sub-activity levels: Governance and Management Support, Resources Management Services and Asset Management Services. However, the sub-activity Asset Management Services is not addressed in this report.

Program Sub-Activity: Governance and Management Support

Objective: Implement the government's commitment to modern public service management in the area of governance and management support in accordance with the Management Accountability Framework's expectations.

RESOURCES	2008-2009	2009-2010	2010-2011
FINANCIAL ($ in millions)	10.3	10.5	10.6
HUMAN (FTEs)	60.0	64.9	65.0

Summary of the Planning Highlights for Governance and Management Support

- In order to align the CSA's strategies, planning priorities, funding levels, and operations, once approved by the government, the Long Term Space Plan will be integrated in the corporate finances, work planning, and performance measurement information systems for the planning of 2010-2011. In the interim, the CSA performance data analysis capacity will be upgraded to meet the performance measurement framework requirements by 2010-2011.
- In order to ensure that ongoing departmental operation control processes are audited, the CSA will implement a departmental audit committee, in collaboration with the Treasury Board Secretariat (TBS). This committee will be responsible to follow-up on the action plans prepared after internal audit reports.
- In order that project and program management meets standards set by the new Government wide Project Management Policy, the CSA will submit TBS a Project Capacity and Risk Assessment in 2009-2010.

Program Sub-Activity: Resources Management Services

Objective: Implement the government's commitment to modern public service management in the area of resource management support in accordance with the Management Accountability Framework's expectations.

RESOURCES	2008-2009	2009-2010	2010-2011
FINANCIAL ($ in millions)	18.8	17.2	17.2
HUMAN (FTEs)	169.0	167.8	166.8

Summary of the Planning Highlights for Resources Management Services

- In order to align the CSA's strategies, planning priorities, funding levels, and operations, once approved by the government, the Long Term Space Plan will be integrated in the corporate financial systems at the beginning of 2010-2011.
- The CSA will fine tune its internal control procedures to assure its managers that all payments are compliant with current financial policies.
- The CSA will continue the implementation of its 2007-2010 Integrated Corporate Human Resources Plan and will integrate the key leadership competency profile into its human resources strategies and management activities.

SECTION 3: SUPPLEMENTARY INFORMATION

3.1 FINANCIAL TABLES

The annexes are linked to the Report on Plans and Priorities 2009-2010 posted on the Treasury Board of Canada Secretariat Web site at:
http://www.tbs-sct.gc.ca/est-pre/estime.asp

Annexe 1: Details on Transfer Payments Program (TPPs)

Annexe 2: Internal Audits

Annexe 3: Evaluations

Annexe 4: Sources of Respendable and Non-Respendable Revenue

Annexe 5: Status Report on Major Crown Projects (MCPs)

Annexe 6: Summary of Capital Spending by Program Activity

Annexe 7: User Fees

3.2 CSA CONTRIBUTIONS TO GOVERNMENT OF CANADA OUTCOMES

http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

3.3 INDEX OF CSA SPACE MISSIONS

http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament